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An Improved Multi-Objective Particle Swarm Optimization Routing on MANET

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Abstract: A Mobile Ad hoc Network (MANET) is a group of low-power consumption of wireless mobile nodes that configure a wireless network without the assistance of any existing infrastructure/centralized organization. The primary aim of MANETs is to extend flexibility into the self-directed, mobile, and wireless domain, in which a cluster of autonomous nodes forms a MANET routing system. An Intrusion Detection System (IDS) is a tool that examines a network for malicious behavior/policy violations. A network monitoring system is often used to report/gather any suspicious attacks/violations. An IDS is a software program or hardware system that monitors network/security traffic for malicious attacks, sending out alerts whenever it detects malicious nodes. The impact of Dynamic Source Routing (DSR) in MANETs challenging blackhole attack is investigated in this research article. The Cluster Trust Adaptive Acknowledgement (CTAA) method is used to identify unauthorised and malfunctioning nodes in a MANET environment. MANET system is active and provides successful delivery of a data packet, which implements Kalman Filters (KF) to anticipate node trustworthiness. Furthermore, KF is used to eliminate synchronisation errors that arise during the sending and receiving data. In order to provide an energy-efficient solution and to minimize network traffic, route optimization in MANET by using Multi-Objective Particle Swarm Optimization (MOPSO) technique to determine the optimal number of clustered MANET along with energy dissipation in nodes. According to the research findings, the proposed CTAA-MPSO achieves a Packet